

Presenters:
Caroline Noble, Project Technical Lead



Kim Ernstrom, Technical Lead

# https://iftdss.firenet.gov

- ✓ Demo of Basic Functions and Models
- ✓ Examples of Use
- ✓ How to find out More!

# The IFTDSS Team



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# https://iftdss.firenet.gov













University of Idaho
College of Natural Resources





# Welcome to IFTDSS

The Interagency Fuel Treatment Decision Support System



Use Google Chrome with IFTDSS IFTDSS has been developed and tested for Google Chrome. If you don't currently have Google Chrome installed, visit our Chrome help page for agency-specific guidance.

#### **New! Compare Weather**



Read About Compare Weather (PDF)

Watch a Short Overview

Visit the Help Center Topic



**Get Started With IFTDSS** 

Take an IFTDSS Overview Course
Read Introductory Help Topics
Read Case Study Examples
Agency Users: Learn About FTEM

#### Run Risk Assessments



Read About Risk Assessment (PDF)

Visit Risk Assessment Help Topics

Watch the Webinar

Watch the Risk Intro Video

#### **Announcements**



Download Shapes and Shapefiles

Model MTT Fire Spread

Check out the forum

The second secon

Watch Recorded Webinars

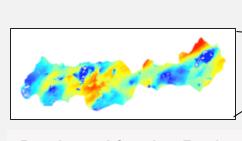
# Why IFTDSS?



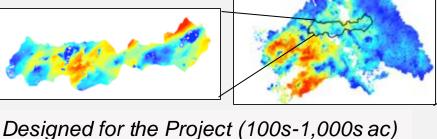
- Proof of Concept began in 2007
- Current version deployed in 2017
- Consolidation of frequently used planning tools
- Risk-based fuel treatment decision making
- Align fuels treatment information with wildfire response
- Facilitate spatial planning for non-GIS experts
- Get spatial tools and education on modeling into the hands of Fire Managers early in their career

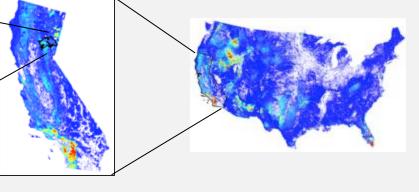
https://iftdss.firenet.gov/landing\_page/history.html

What scale does IFTDSS address?



And Unit scales (1,000s to 3.5M ac)





# **Project**

- Fuel treatment planning
- Compare treatment
- alternatives Assess/monitor fuel treatment

effectiveness

#### Unit

- Project planning and prioritization
- Risk reduction (fuel treatment program effectiveness)

### Regional

- **Funding** allocation
- Risk reduction

Completed for various locations in the West & NE is undergoing

the process now

#### **National**

- Funding allocation
- Risk reduction at a national scale

Completed by RMRS and FMI

# What is IFTDSS being used for?

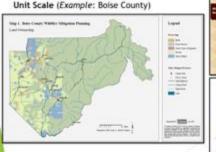
- NEPA specialist reports
- Prescribed Fire Plans
- CWPP Community Wildfire Protection Plans
- Quantitative Wildfire RiskAssessments
- Multi-year fuels planning documents

- Hazard Analysis
- Fuel Treatment Prioritization
- Map Interface in Public Meetings
- Fuels and Fire Behavior Training and Education

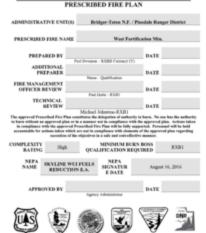
TELL US WHAT
YOU ARE USING
IFTDSS FOR!



A Handbook for Wildland-Urban Interface Community

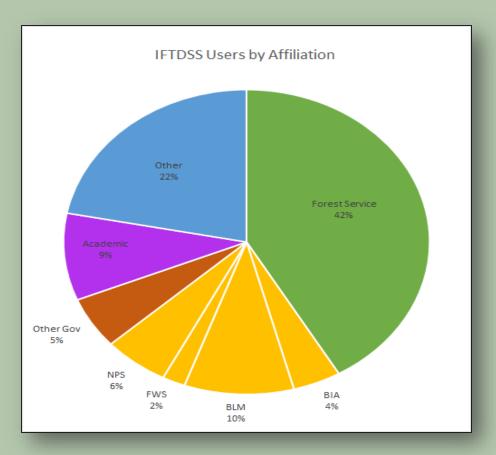






## Who Uses IFTDSS?

Over 3200 user accounts since we launched in spring of 2017



#### ~70% Government

- Federal
- Tribal
- State
- County

#### ~30% Non Government

- Academic institutions
- NGOs
- Private sector
- Miscellaneous

# **Navigating IFTDSS**



#### Planning Cycle: Hub to all the functionality

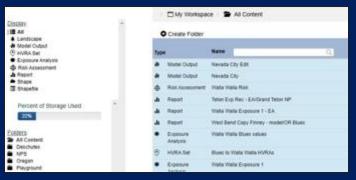




# **Map Studio:** View geospatial data and your products



#### My Workspace: Home to all your files

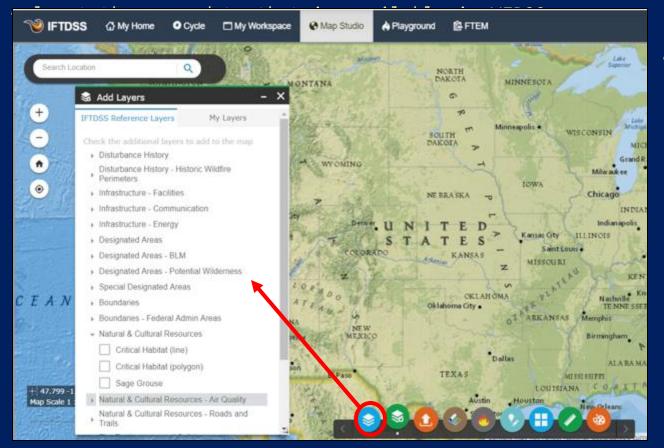


#### Playground: Run fire behavior models



# Map Interface With Consistent Nationwide Reference Datasets





Used for creating maps, or as masks for editing or area of interest for reporting

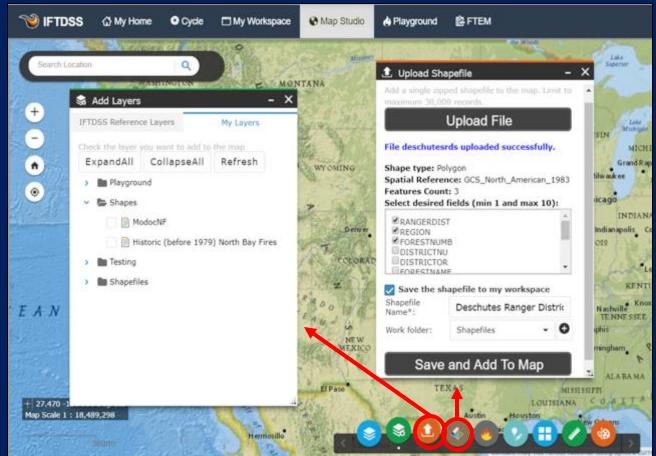
- Fuel treatments
- Fire History
- Infrastructure
- Designated areas
- Jurisdictional boundaries
- Natural & cultural resources
- And more...

Upload, Download, Save And Edit Shapefiles

💸 IFTDSS

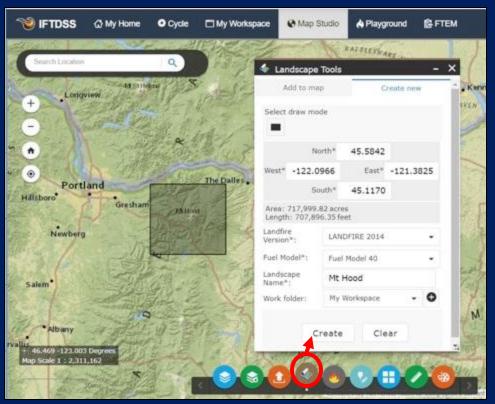
When the reference data doesn't meet your needs you can upload and save shapefiles for use throughout the application

Used for creating maps, or as masks for editing or area of interest for reporting



## Generate And Edit Landscapes (up to 3.5 million acres)

Landfire 2012 - 2016





## **Export Landscape Data And Fire Model Outputs**

A STREET - Av. Man

O A S

Moscowkt: Auto67th.3f - 1 Hour Fuel Moisture
 Moscowkt: Auto67th.3f - 10 Hour Fuel M

| MoscowAt- Autoli7th.st - Maximum Spot Direction
| MoscowAt- Autoli7th.st - Maximum Spot Direction
| MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - Maximum Spread Direction | MoscowAt- Autoli7th.st - MoscowAt- Autoli7th.st - MoscowAt- Autoli7th.s

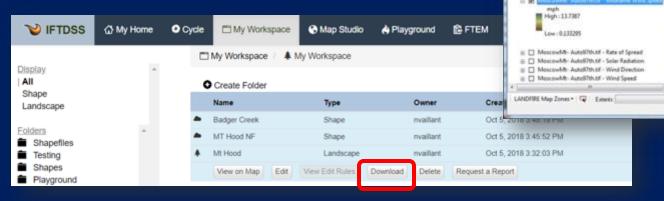
Moscowhit: Autoli7th.sif - Fretine Intensity
 Moscowhit: Autoli7th.sif - Fretine Length
 Moscowhit: Autoli7th.sif - Next per Unit Ares
 Moscowhit: Autoli7th.sif - Next per Unit Ares



9393.727 13162.36 Meters

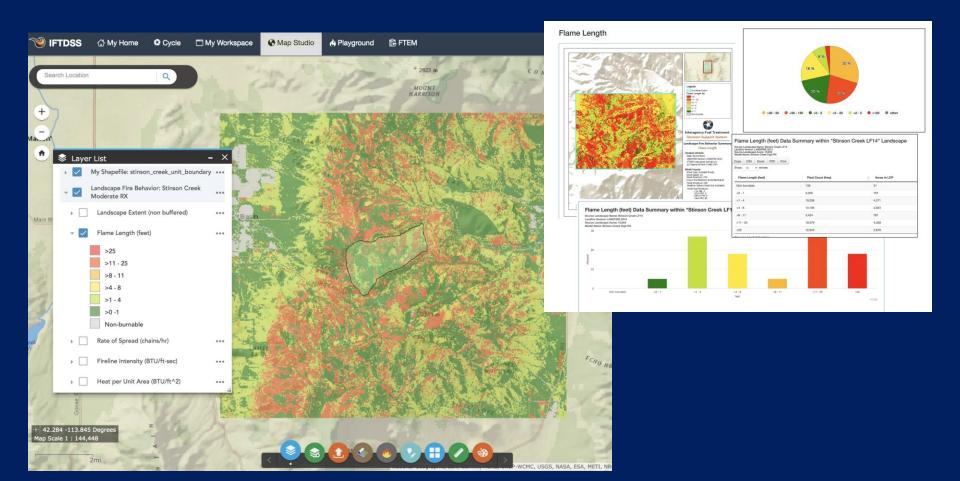
\*\*\* 概点 # 国皇 XTook Pro

- Multi-band GeoTiffs
- Original &/or edited landscapes
- Fire model outputs
- Use in other programs that need LCPs (FlamMap, FARSITE, etc.)
- Bring into GIS for further analysis



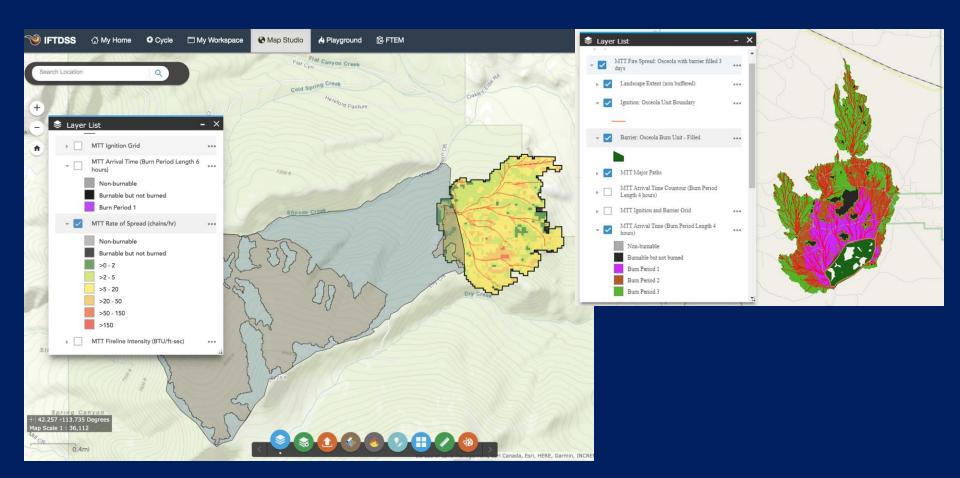
## **Model Landscape Fire Behavior**



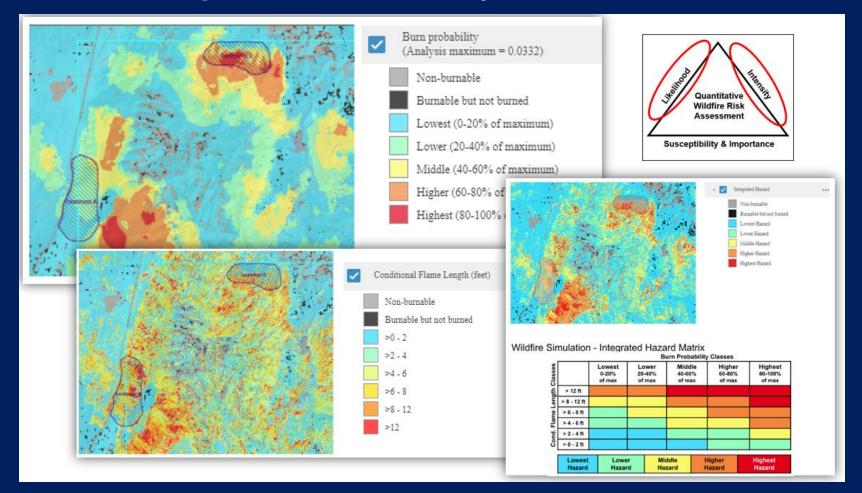




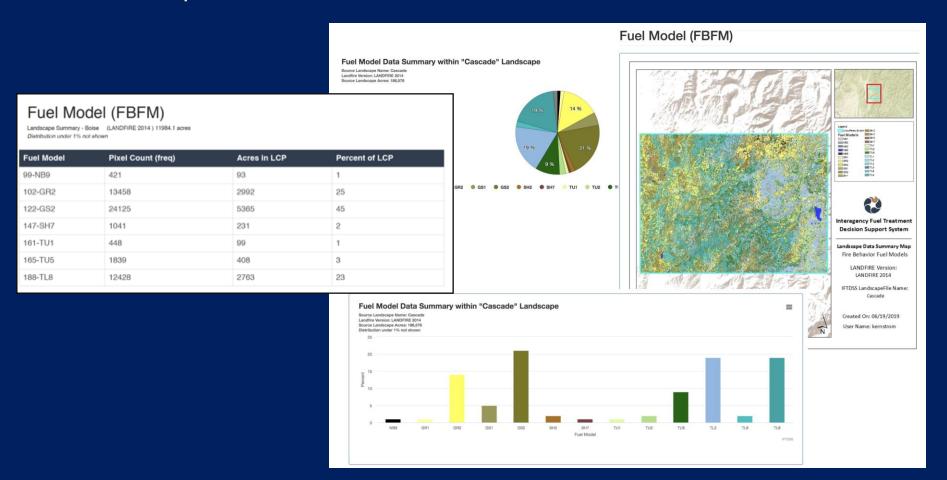
### **Minimum Travel Time Fire Spread**



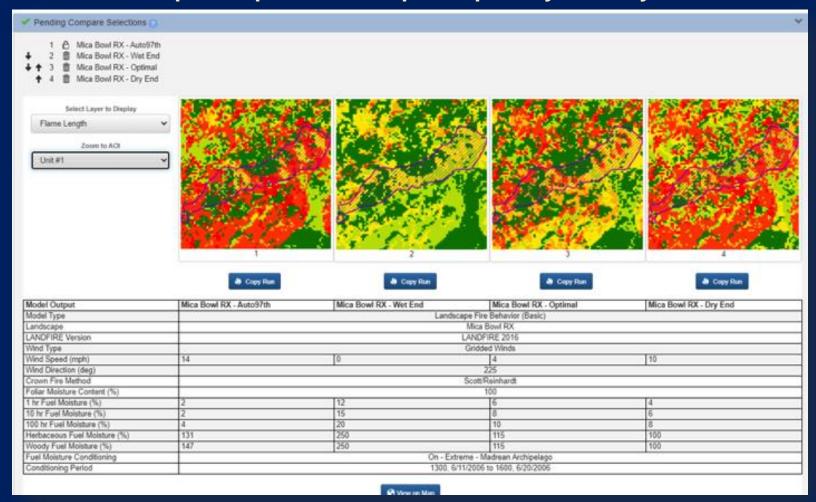
### **Model Landscape Burn Probability**



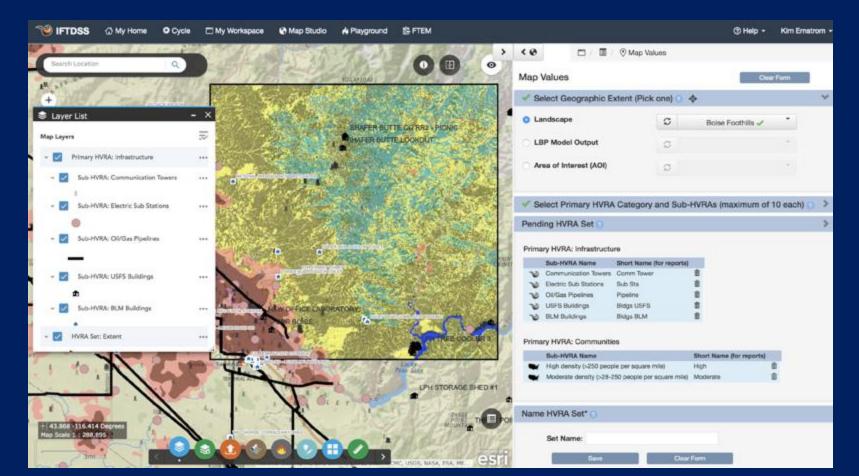
# **Generate & Download Reports** summarizing fuel model characteristics for entire landscapes or defined areas of interest



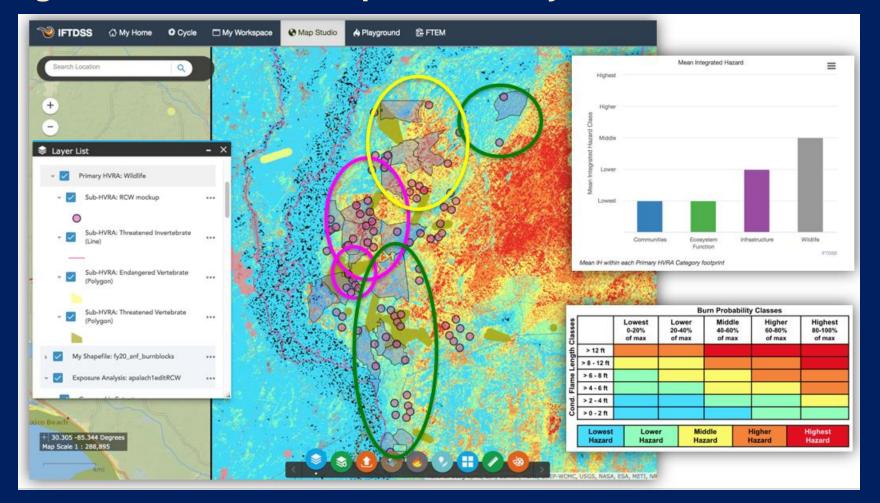
#### **Use IFTDSS to Compare Inputs and Outputs Spatially Side-by-Side**



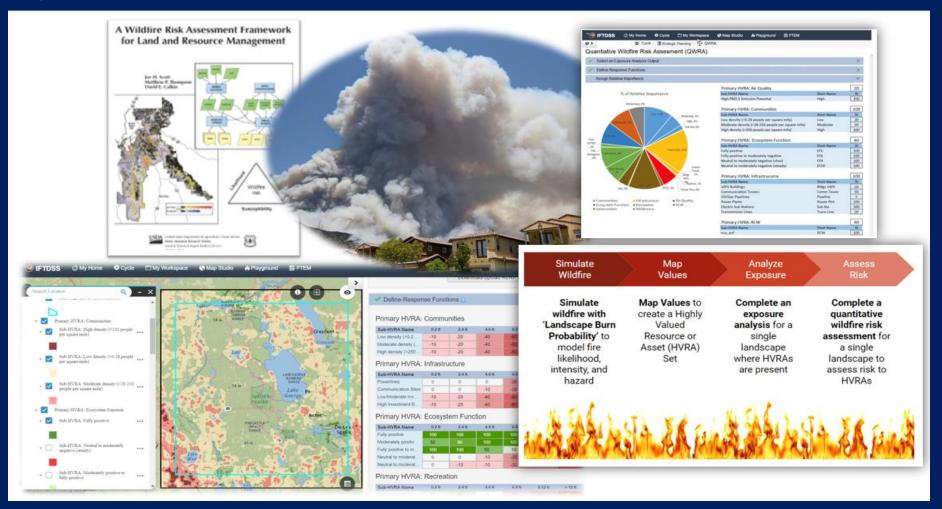
# Map Values: Map Highly Valued Resources or Assets (HVRAs) using National Risk Assessment Data, IFTDSS Reference Data or Upload your own



## **Integrated Hazard and Exposure Analysis**



### **Quantitative Wildfire Risk Assessment**







My Home

Cycle

☐ My Workspace

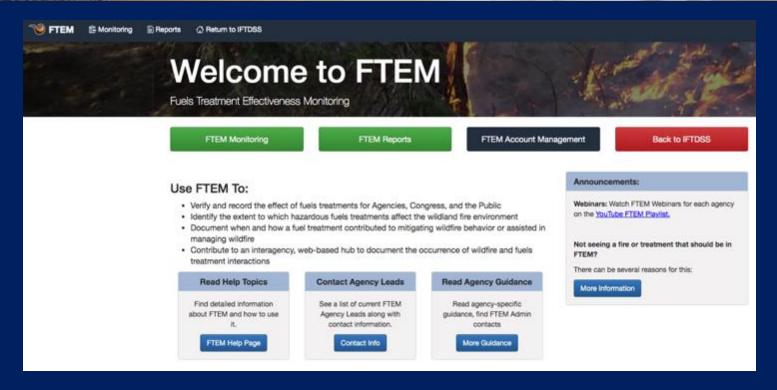
Map Studio

A Playgro

IS FTEM

#### Welcome to IFTDSS

The Interagency Fuels Treatment Decision Support System

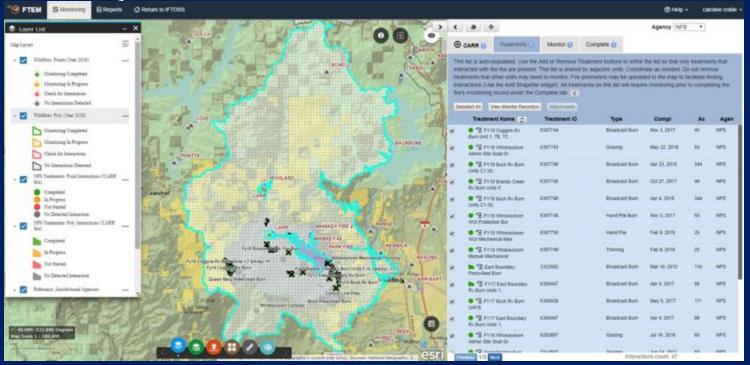




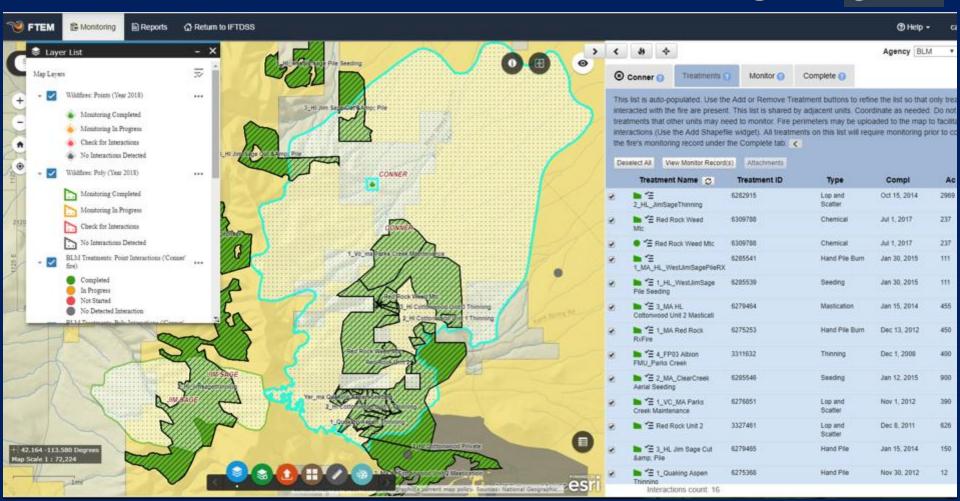
How do you know your fuels treatments are effective given their objectives?

- "Hazard Fuel Reduction"? So you reduced the fuel load did it reduce the Hazard?
- Wildfire Mitigation? did the fuel treatment really "stop" or "slow" the approaching wildfire?

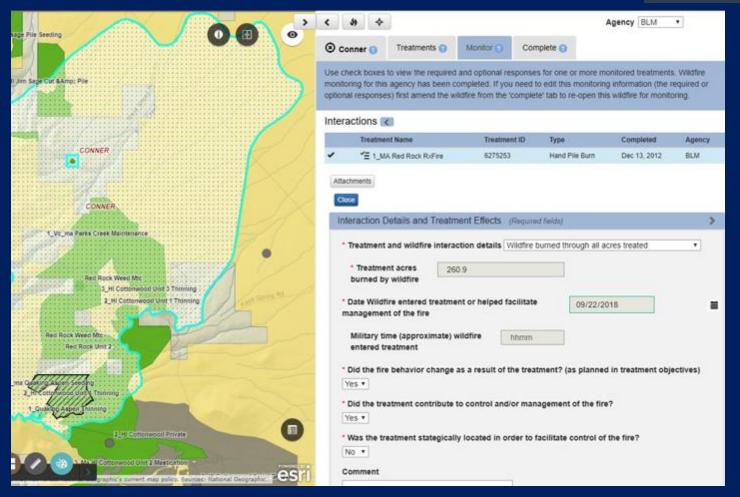
Systematic way to record wildfire and fuel treatment interactions.



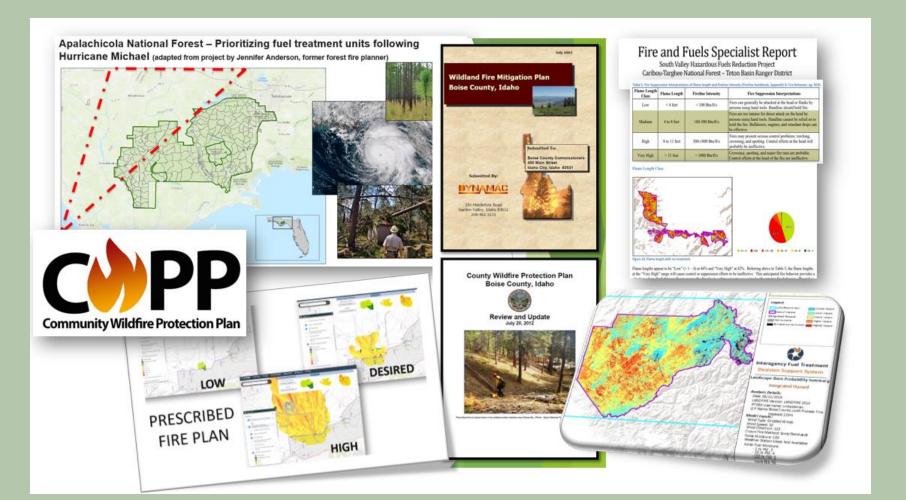








#### IFTDSS Uses in the Field



### NEPA Reports and Developing Treatment Alternatives

Surface

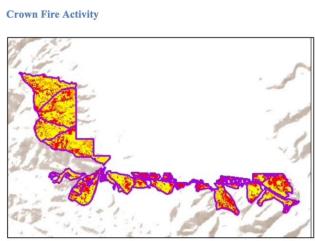


Figure 16. Crown Fire, no treatment.

Pre and Post Treatment
Fire Behavior on the
Caribou-Targhee
National Forest

### Fire and Fuels Specialist Report

South Valley Hazardous Fuels Reduction Project Caribou-Targhee National Forest – Teton Basin Ranger District



Figure 171. Crown Fire, post treatment.

The post treatment crown fire activity, Figure 17, is reduced to a surface fire in the TU5 fuel model, and in other fuel models that were previously portrayed as passive or active crown fire activity along the forest boundary on the north side of the project area. Due to the reduction of ladder and surface fuels the fire has limited potential to spread to the tree canopy. The proposed treatment provides a mosaic of vegetation where passive crown runs are still possible but will be of short duration due to the change in fuel continuity and the introduction of more early successional stage vegetation.

### Using IFTDSS to Inform Your Burn Plan

#### IV. ELEMENT 4: DESCRIPTION OF PRESCRIBED FIRE AREA

#### A. Physical Description

#### Location

Adjacent to the community of Yosemite Village CA

Latitude N 37° 44.72', Longitude W -119° 34.67'

UTM Zone 11, Easting 272,891m, Northing 4,180,734m

The YV-22 (Ahwahnee Meadow) Prescribed Fire unit is 62 acres, divided into two segments of 50 acres in the northern segment and 12 acres in the segment south of the Yosemite Logo Road.

#### Topography

Elevation: 4000 feet, Slope(s): 0 - 10%, Aspect(s): south

#### Project Boundary

Description of holding boundaries: YV-22 is bounded on the north by Ahwahnee Road, to the west by a paved footpath between Ahwahnee Road and Yosemite Loop Road, to the south by a paved footpath bordering the Merced River, to the east by a footpath and hand-line adjacent to the lawns of The Ahwahnee that intersects with The Ahwahnee Road to the north. The unit is broken into two segments, divided by the Valley Loop Road. See map, Appendix A-B.

#### Vegetation and Fuels Description

Fuels in YV-22 are characterized in the tables below.

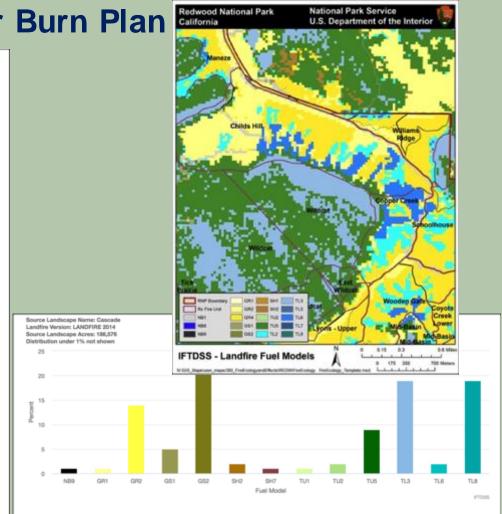
Meadow/Forested: Northern Segment: approximately 50 acres total

Vegetation	Fuel Model	Acres
Black Oak	TL6	8.5
Ponderosa	TL8	6.5
Meadow	GR4	35

River: Southern Segment: approximately 12 acres total

Vegetation	Fuel Model	Acres
Black Cottonwood	TL2	1
Ponderosa	TL8	7.5
Meadow	GR4	3.5

The fuels surrounding YV-22 are primarily ponderosa pine mixed conifer and black oak.



National Park Service

### Element 7: **Prescription**

#### ENVIRONMENTAL AND FIRE BEHAVIOR PRESCRIPTION FIRE BEHAVIOR LEVELS OUTSIDE AREA LOW DESIRED HIGH CRITICAL TEMPERATURE (F) 50 70 75 HOLDING POINT RELATIVE BUMIDITY (%) 50 30 20 MIDFLAME WIND SPEED (MPH) 2-4 5 0 20 FT WIND SPEED (MPH) 4.8 10 WIND DIRECTION ANY 1-HOUR PLEA MOISTURE (%) 10 16-BOUR FUELMOISTURE (%) 13 10 8 100-HOUR FUEL MOINTURE (%) 16 13 11 LIVE HERBACEDEN FUEL 120 100 80 MOISTURE LIVE WOODY FUEL MOINTURE 140 120 100 SH5 50% SH5 50% SH\$ 50% SH5 50% FULL MODELS(S) (FRPS) GR2 50% GR2 50% GR2 50% GR2 50% RATE OF SPREAD (CHATEO FLAME LENGTH (FEED) PROBABILITY OF IGNITION (%)

#### ADDITIONAL INFORMATION:

Predicted fire behavior in grass fuels is driven by 1-hour timelag fuel moisture and mid-flame mindspeed. Predicted fire behavior in shrub and brush is driven by 1 and 10-hour timelage fuel moisture and mid-flame windspeed. Calculated 1-hour fuel, moisture is a product of temperature. shading, and relative humidity.

The Environmental Prescription parameters are determined by the temperature, shading, and relative humidity gapges which will be used to calculate for fine dead fuel moistures that model within the desirable range of fire behavior.

Mid-flame (eye-level) winds over 6 mph are out of prescription.

#### FIRE BEHAVIOR NARRATIVE:

At maximum prescribed wind speeds and minimum fuel moisture values:

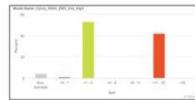
#### Inside the unit and outside the unit to the north and west

BehavePlus v. 5.0.5 predicts rates of spread up to 51 ch/hour with flame lengths of up to 15'. Backing or flanking fire at this location would reduce predicted rates of spread and limit flame lengths to 4-6".

See IFTDSS Outputs for spatial distribution of fire behavior - Flame Length and Rate of Spread.

Mitigations will be discussed in the Holding and Contingency Sections

### Flame Length Low End Flame Length Desired World Barrier Tiprice, sciling East, long, Supp. Flame Length High End





# Element 16: Holding Plan - Visually show Points of Concern

#### XVI. ELEMENT 16: HOLDING PLAN

#### A. General Procedures for Holding

Holding will be accomplished with use of hand crew and engine personnel on scene. Firing crews will coordinate with holding crews to insure the application of fire is manageable. Areas adjacent to the prescribed fire unit will be gridded for spot fires as necessary during the ignition and holding phases of the fire. A minimum of two wildland engines will be stationed on the fire, to patrol and pump any hose lays. During the treatment of each segment, one engine will be identified for the protection of structures as needed. Hand crew and engine personnel will manage hose lays positioned around the hand lines forming the boundary of the unit.

The following tools will be utilized:

Hand tools -- shovel, mcleod, pulaski, or other fire approved digging tool,

Chainsaw and proper PPE to cut and exclude large woody debris.

Engines, tenders, portable tanks, portable pumps, and hose lays can be positioned if needed on the segment perimeters prior to ignition.

#### **Patrois**

In season firing will require daily staffing of at least one FFT1 and two FFT2s until there is no chance of escape. Once threat of escape is minimized, at least two to three daily patrols will occur until the prescribed fire shows little to no smoke for 1 week. As the season progresses and hotter drier weather prevails, extra effort will be made to ensure unburned pockets of fuels do not reignite. Duties of the patrollers include but are not limited to: interaction with locals or visitors, cutting off burning logs/limbs to prevent escape, and extinguishing or mopping-up or felling of burning cat faces and snags.

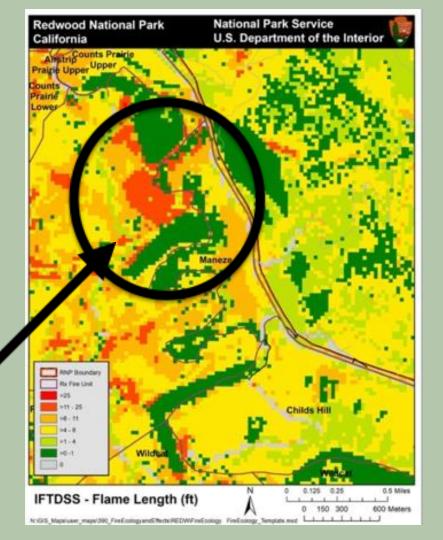
Dut of season burning will require at least one FFT1.

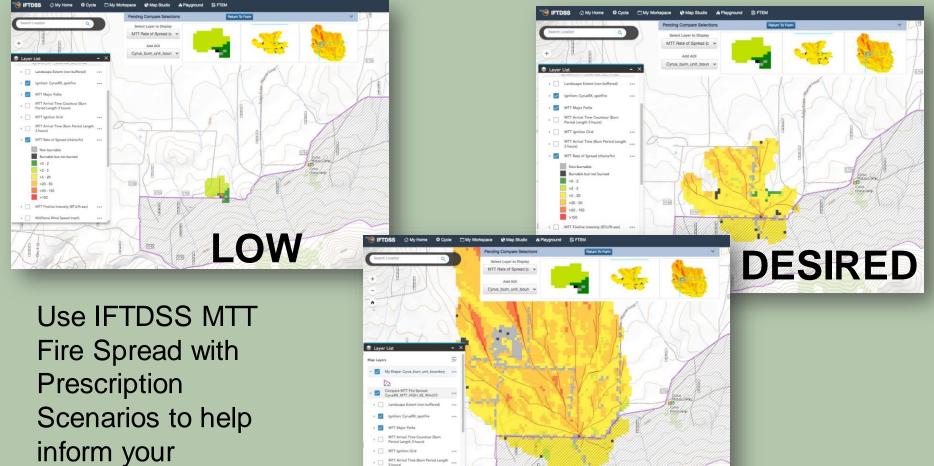
#### Critical Holding Points and Actions

The most critical holding points will be adjacent to The Ahwahnee Row housing area. The risk in these areas is relatively low as they have been thinned and burned within the past 10 years. Other critical holding areas are along remote hand lines adjacent to The Ahwahnee lawns Diligent patrols along these hand lines are critical to a successful operation. Any small slop-overs or minor spot fires will be suppressed by the holding crews. Areas adjacent to the fire will be gridded for spot fires as necessary during the ignition and holding phases. Yosemito's helicopter may be requested to assist with suppression of slop-overs/spot fires.

#### C. Minimum Organization or Capabilities Needed

See Element 11A above and Appendix F for minimum resources needed.





HIGH

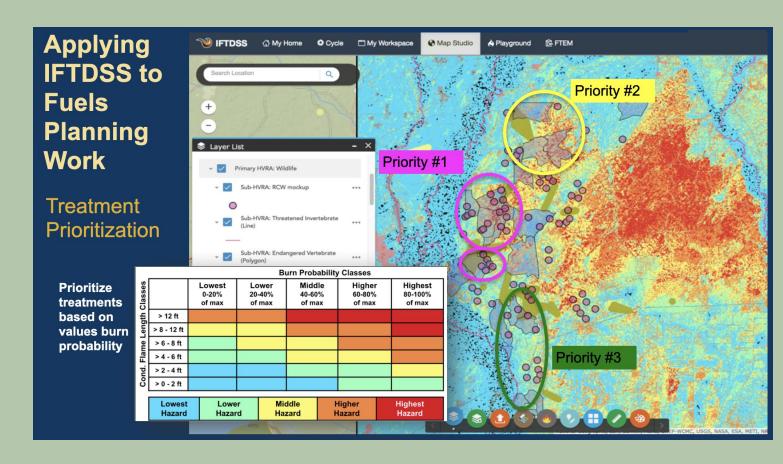
MTT Rate of Spread (chains/hr)

Non-bumable Burnable but not burned >0.2 >2-5

**Contingency Plan** 

### Treatment Prioritization: Integrated Hazard and Exposure Analysis

Identify
locations
with high
exposure
for fuel
treatment
planning

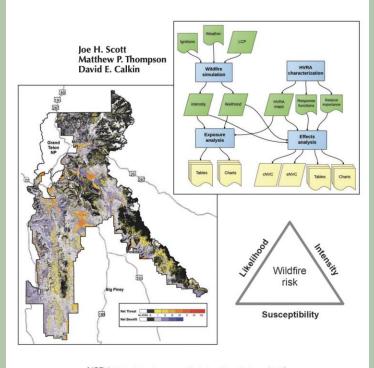


### **Conduct Quantitative Wildfire Risk Assessment (QWRA)**

Managing Wildfire and Prioritizing Fuel Treatments

- Net Benefit of Wildfire
- Net Threat from Wildfire

# A Wildfire Risk Assessment Framework for Land and Resource Management



United States Department of Agriculture / Forest Service

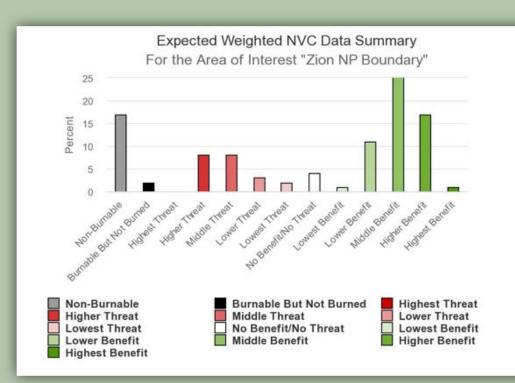
Rocky Mountain Research Station

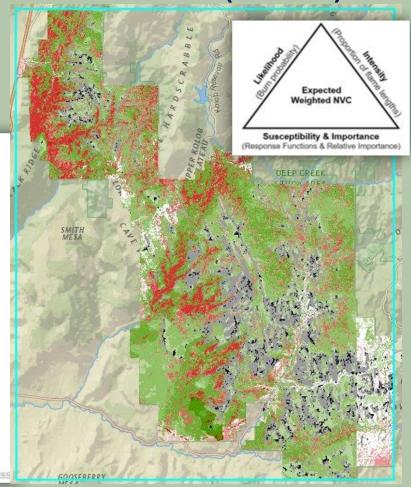
General Technical Report RMRS-GTR-315



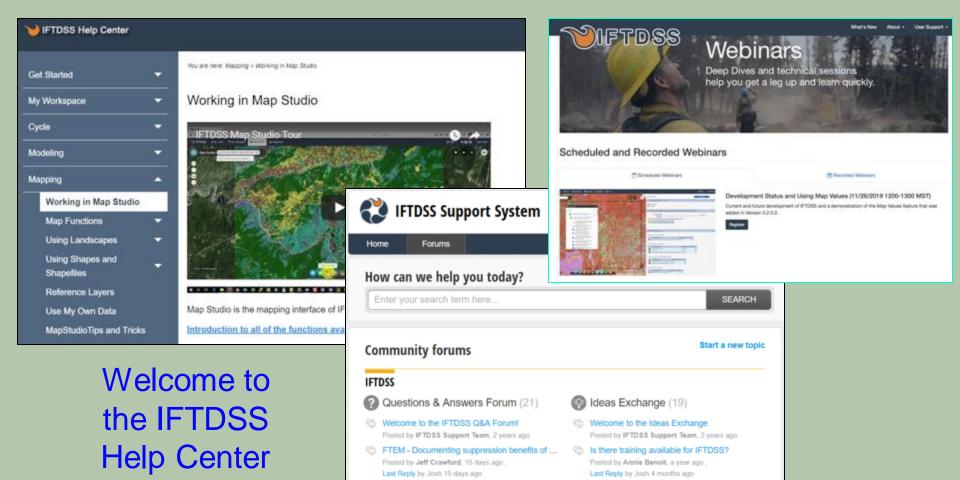
## Conduct Quantitative Wildfire Risk Assessment (QWRA)

### **Zion National Park**





### How can I learn more about IFTDSS?



### How can I learn more about IFTDSS?





# **Coming Soon!**

HOW TO USE IFTDSS FOR PRESCRIBED FIRE PLANS

### https://wildlandfirelearningportal.net/









## The IFTDSS Team



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